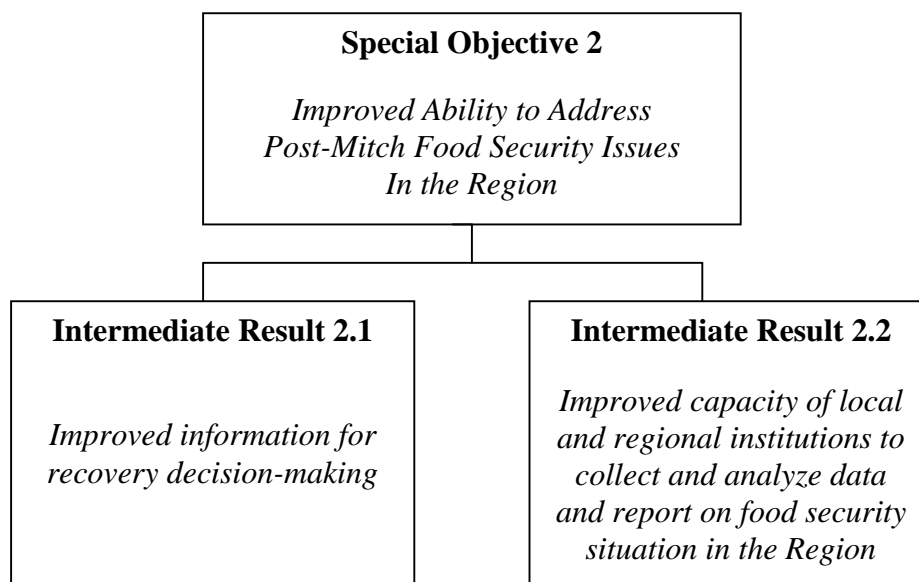


SECTION II: DETAILED ACTIVITIES BY COUNTRY

The United States Department of Agriculture provided enhanced information and analytical tools to key food security officials in Central America during the Hurricane Mitch Recovery Program. Activities carried out under this program were developed in response to the situation assessment and problem analysis conducted at the onset of the USDA Hurricane Mitch Recovery Program. The Special Objective 2 response consisted of two Intermediate Results as reflected in the following framework:



Three USDA organizations contributed collectively to the achievement of SpO2. They are:

- The National Agricultural Statistics Service (NASS)
- The Production Estimates and Crop Assessment Division (PECAD) of the Foreign Agricultural Service (FAS)
- The Economic Research Service (ERS)

The three agencies worked independently but cooperatively to achieve the desired results. The activities implemented by each of the agencies were distinct depending on the specific technical expertise required and the technology, processes and methodologies used. In the relatively short implementation period of the program, the products created and the services rendered by the Department of Agriculture achieved the Intermediate Results and the Strategic Objective.

SpO 2 activities addressed issues that were common among the target countries within the region. For the NASS and PECAD projects, we have disaggregated the

accomplishments, impacts and future considerations by country (Nicaragua and Honduras). The ERS Project activities were regionally focused and are reported here in a separate chapter. Section II is organized as follows:

- A. Country Program Description--Nicaragua
Project 1—NASS Technical Assistance
Project 2—PECAD Technical Assistance
- B. Country Program Description—Honduras
Project 1—NASS Technical Assistance
Project 2—PECAD Technical Assistance
- C. Regional Program Description—ERS Technical Assistance

A. COUNTRY PROGRAM DESCRIPTION--NICARAGUA

Project 1 National Agricultural Statistics Service (NASS) Technical Assistance

Project Summary

The National Agricultural Statistics Service (NASS) technical assistance and training activities in Nicaragua under SpO 2, *Improved Ability to Address Post-Mitch Food Security Issues in the Region*, focused on components of both Intermediate Results:

2.1 Improved information for recovery decision making, and

2.2. Improved capacity of institutions to collect and analyze data and report on food security situations in the region.

USDA/NASS expertise under the Hurricane Recovery project was coordinated through the International Programs Office (IPO). Working closely with the SpO2 team leader of the Foreign Agricultural Service (FAS) office of International Cooperation and Development (ICD), the IPO developed a systematic program of technical assistance and training activities over the two year duration of the program.

In effect, NASS assistance under the Hurricane recovery program in Nicaragua became a continuation of previous technical assistance work funded by the Inter-American Development Bank (IDB). Prior contacts established between NASS and the Office of Statistics in the Ministry of Agriculture and Forestry (MAG-FOR) helped contribute to a rapid initiation of technical assistance under the Hurricane Mitch program.

NASS/IPO activities under SpO2 were directed at strengthening the Office of Statistics in MAG-FOR. Specific areas of technical capacity building and institutional strengthening activities included:

- statistical sampling;
- data collection and gathering techniques;
- estimation analysis;
- timely dissemination of reports relating to the agricultural status of major commodities in Nicaragua for use by national decision-makers, private sector personnel, donors and other interested parties.

MAG-FOR staff and the NASS/IPO Hurricane Mitch team leader selected the technical assistance activities based on a comprehensive review of the methodologies, processes and procedures MAG-FOR Office of Statistics used in their agricultural surveys and crop estimation reporting activities.

The activities were designed to improve data collection/analysis and institutional technical capability to respond to on-going data needs and to crisis situations. The Hurricane Mitch event demonstrated the vulnerabilities related to timely and reliable collection and dissemination of information related to agricultural statistics. Specifically:

- Sampling activities address the need for an unbiased means of collecting statistical information. Statistical criteria are required in order to measure probabilities with consistent reliability. Area and List frames (see descriptions below) provide a greater degree of objectivity and, as such, were a focus for this project.
- Questionnaire design and development addresses the issue of improving the collection of information. The need for rapid response during times of crisis or emergency and the ability to design instruments to address critical information needs were clearly areas of technical vulnerability.

The capability to respond during crisis (droughts, floods, hurricanes, etc.) with improved data collection and analysis products was an expectation of the NASS technical assistance. A strengthened ability to use the methodologies and procedures on a continual basis to improve regular reporting for food security information and analysis was also a key expectation and indicator of success.

Specific Activities

Sampling Activities

The improvement of sampling methodologies was designated as a key technical assistance activity under the Food Security Special Objective for NASS in Nicaragua. Statistical sampling seeks to establish valid samples in order to quantify trends or relationships within a group. As such, it is a fundamental competence needed for improving the reliability of agricultural information and statistics. The economics of sampling--allowing for relatively small samples to be surveyed to represent the larger population—provides even resource poor countries like Nicaragua a cost effective mechanism for gathering and analyzing important agricultural statistical information. Sampling methodology improvement focused on the use of Area Frame and List Frame methodologies.

1. Area Frame

In area frame sampling, aerial photos and maps are used to divide the surveyable land area into small segments. Each segment has unique and identifiable boundaries outlined on aerial photographs or maps. An area frame sample is a random selection of these segments drawn onto aerial photos. Field investigators called “enumerators” visit the segments and record information about agricultural activity within the segment

boundaries. The area frame technique is used to collect information about crops, farmer households, animals, and so forth. The sample technique provides continuous coverage of all agricultural activity in the area and guards against omission or duplication in the statistics.

Area frame construction requires a process known as stratification. Stratification is the division of a land area into broad land use categories such as cultivation, natural vegetation, cities, non-agricultural land and large bodies of water. Stratifying the land area allows for more efficient identification of the sample of land where more extensive agricultural activity is expected. NASS training and technical assistance work addressed the sample selection process as well as the sample preparation process. This process of creating an area frame was demonstrated and introduced to provide MAG-FOR with an alternative choice to the point-sample area frame constructed under previous technical assistance.

NASS technical assistance provided training in area sampling frame construction to MAG-FOR cartographic and statistical staff. Specialists in area frame sampling construction and Geographic Information Systems (GIS) reviewed land stratification work performed by MAG-FOR and assisted personnel in developing a new sampling frame for three municipalities--Rio Blanco, La Dalia, and San Ramon, all located in the Department of Matagalpa.

2. List Frame

NASS also provided intensive technical assistance in the construction of a list sampling frame. For surveys in which the commodity to be estimated is highly concentrated within a comparatively small area, the list sampling frame can be useful. Estimates of these commodities demand a higher degree of precision than samples from the area frame can provide. Therefore, samples for these types of surveys are drawn from a list frame consisting of the names and addresses of producers, including those of larger scale grouped by size and type of unit. Another application of list sampling would be to collect information for large producers who contribute significant quantities to total production.

Surveys that rely on the list frame may cost less than those done with the area frame, if the data can be collected largely by mail or phone; area frame sampling requires face-to-face interviews. The list frame represents a better mechanism for collecting information on major commodities and helps to control the impact of large operators. NASS provided technical guidance in the development of a list frame for coffee production. This commodity is highly concentrated in the Matagalpa region.

Objective Yield Survey

The NASS technical assistance also introduced the survey methodology “objective yield” which is a quantitative procedure to determine crop yields. During the growing season, crop conditions and yields are monitored by counting and measuring the maturing plants, then yield forecasts and/or production projections are made for the specific commodities (such as corn and beans).

In the objective yield technique, enumerators walk a randomly selected number of paces into statistically selected fields and mark off a small sample plot no matter what the condition of the crop is at that particular location. This practice minimizes selection bias that could skew the final estimate. At the designated field location, the enumerator counts the number of plants and measures the distance between rows to determine plant population per acre. Then the enumerator counts immature and mature fruit (e.g., ears of corn) and records the crop's stage of development. With the collected data on plant population per acre and projections on yield per plant, statisticians can forecast yield per acre.

All objective yield surveys require enumerators to repeat their visits to the sample plots several times during the growing season if multiple forecasts are desired. When the crop reaches maturity, they harvest a portion of each plot by hand and send samples to a laboratory for weight and moisture analysis. When the farmer harvests fields containing the sample plots, enumerators make their final visits to the plots to determine harvesting losses and estimate net yields.

NASS technical staff implemented a comprehensive training workshop in this objective yield survey methodology for 18 MAG-FOR enumerators. The workshop focused heavily on practical field-based demonstrations and skill development.

Questionnaire Design

In order to improve the quality of data gathered through surveys, questionnaires need to be as clear and efficient as possible. Clarity in the questions helps remove ambiguity and results in a reduction of non-sampling error. Efficiency of design reduces the burden on both the respondent and enumerator.

NASS technical specialists led review sessions with MAG-FOR staff to assist them in assessing the strengths and weaknesses of the questionnaires they had been using. NASS offered suggestions for improving specific elements of the questionnaires, and provided guidance in how to conduct the questionnaire design process. The NASS team also encouraged MAG-FOR staff to review their questionnaires periodically to determine whether each of the questions still serves a useful purpose and to remove any that do not.

Key Accomplishments/Practical Impacts

The MAG-FOR Agriculture Statistics office capacity to understand and apply the sampling techniques of area and list frame is excellent and will continue beyond the USDA/NASS technical assistance. Their capacity to establish an objective yield sample and collect the data is good. Their ability to interpret and use the data remains limited but, as result of NASS assistance, they have a better understanding of current statistical methodologies and how to apply them. This is an important step toward building the capacity of the unit to provide on-going valid statistical information to users.

Constraints to the implementation of activities

Time allotment and funding of the Hurricane Mitch project did not allow for full development and implementation of the yield program.

Additional Measures To Protect The Investment/Recurring Costs

Additional training and technical assistance will help improve the data analysis capacity of the MAG-FOR Agriculture Statistics office. Objective yield forecasting which has particular application for monitoring expected yields of the key basic grains (corn, rice and beans) can be very complementary to compare data quality and reliability. Costs involved in conducting objective yield surveys at the national level will involve considerable additional MAG-FOR operational expense. If donor support becomes available, USDA/FAS recommends the full implementation of an objective yield survey at the regional and or national levels.

In order to implement the objective yield survey at the national level in Nicaragua, a three-year period of NASS technical assistance is projected as follows:

Year 1:	20 person-weeks staff time (salaries, benefits, overhead, travel & per diem)	\$111,420
Year 2:	16 person-weeks	\$ 89,136
Year 3:	16 person-weeks	\$ 89,136
		=====
Total:	52 person-weeks/3 years technical assistance	\$289,692

Project 2 Production Estimates and Crop Assessment Division (PECAD) Technical Assistance

Project Summary

Under the Food Security Objective of the Hurricane Reconstruction program, the Production Estimates and Crop Assessment Division (PECAD) of FAS was responsible for producing and disseminating timely and objective agricultural production assessments for Nicaragua. The assessments provided in particular early warning of unusual crop conditions and/or changes in production regional outlook.

With large agricultural-based subsistence farming populations, Nicaragua is vulnerable to a host of natural disasters including, drought, floods, and earthquakes, which effect its ability to produce adequate food supplies. PECAD technical assistance was designed to improve information available to national level decision-makers and help them devise better action plans for mitigating the effects of events that impact on agricultural production.

Through the use of “convergence of evidence” methodology, PECAD analysts collected information from a variety of sources thus minimizing the risk of dependence on a single source of data for making crop assessments. Data sources used by PECAD included USDA overseas post reports, satellite imagery analysis, weather data, field travel, foreign government official releases, and agency crop estimates.

PECAD provided technical expertise in the analysis of satellite imagery data of the region and dissemination of analysis through monthly crop assessment reports and estimates/forecasts of crop production levels. PECAD also created a Hurricane Mitch website, which greatly facilitated the availability of all analyses to the region’s Ministries of Agriculture, USAID, Washington staff, USAID/Nicaragua mission, and USDA agencies.

Specific Activities

Crop Production Assessments

Using satellite imagery, PECAD provided to USAID and other agencies the first before and after images of the damage to crop production areas and critical watersheds in Nicaragua. PECAD used this same data for assessing current crop conditions and compiled satellite imagery atlases for hurricane-affected areas.

Briefings

PECAD conducted monthly crop condition briefings through September 2001. These updates utilized information gathered from a variety of sources, including satellite imagery, to provide an up-to-date analysis of the crop conditions in the region. The agency also conducted additional specialized briefings upon request.

Website/Information Dissemination

PECAD operationalized the Hurricane Mitch website. The function of the website is to provide an updated source of SpO2 and Mitch recovery activity information to clients and interested users in the region and the world. The automated weather information section of the website was deployed in mid-March 2001. Weather information is a key variable in determining crop yields and local food insecurity events. This INTERNET site allows for quick information delivery to the decision-makers (USAID, Nicaragua MAG-FOR and others.) The website is automatically updated every 10 days with 210 charts of important sub-regions and 8 regional maps, and provides information on:

- actual precipitation and cumulative precipitation;
- average, minimum and maximum temperatures;
- surface and subsurface soil moisture.

(Website:

http://www.fas.usda.gov/pecad/highlights/Mitch/economic_research_service.htm)

Technical Assistance/Training

MAG-FOR and the National Institute of Territorial Studies (*Instituto Nacional de Estudios Terretoriales*, INETER) became part of a data exchange network with USDA/PECAD, allowing them access to mission critical data. The network included an imagery agreement in which PECAD donated full country Landsat 7 Digital Imagery to MAG-FOR and INETER. The imagery will improve the institutions' ability to provide information for recovery decision-making and build their capacity to collect and analyze data and report on food security situation in Nicaragua.

Key Accomplishments/Practical Impacts

Drought Analysis

During the primary growing seasons of 2000/01, particularly 2001, PECAD analysis highlighted the low rainfall conditions in parts of Nicaragua. This analysis was communicated through the monthly crop "condition assessment briefings" and the Internet site. The field analysis, conducted in country, confirmed the effects on

production in specific geographic sectors and their implication for total production during the 2000/01 crop cycle.

Website

Deployment of the automated weather information section of the website was accomplished in mid-March 2001. This INTERNET site allows for quick information delivery to the decision-makers (USAID, MAG-FOR and others.) The weather information was designed to be generated automatically and can be sustainable after the end of the USAID-funded Mitch project with minimal maintenance costs.

Host Counterpart Institutional Strengthening

The data exchange network developed with INETER was an important institutional linkage initiated by PECAD and will continue beyond the program end date. Source data is collected by both entities and sent via email to PECAD in Washington. The analysis of this data is integrated into the automated weather information section of the PECAD website for Central America and is available to all decision-makers in the region.

Additional Measures To Protect The Investment/Recurring Costs

Investments in the region were made primarily through training and technical assistance. Continued contact between PECAD and the host country institutions will contribute to the on-going functioning of the data exchange network.

Enhancement of GIS capabilities in Nicaragua will contribute to better data collection and analysis capabilities, which in turn, will improve agricultural production assessments and overall decision making. An enhanced GIS capability would also facilitate the integration of Global Positioning System (GPS) technology into the agricultural survey work conducted by the MAG-FOR Agricultural Statistics office.

Cost implications for GIS enhancement:

- Purchase of GPS units @ \$160 per unit (approximately 5 units needed)
- Purchase of desktop or laptop computers @ \$1200 per unit for downloading and uploading and processing data
- Internet connection @ \$60 per month
- GIS software costs @ \$1,200